

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
6 May 2005 (06.05.2005)

PCT

(10) International Publication Number
WO 2005/041627 A2

(51) International Patent Classification⁷:

H05K 7/00

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:

PCT/DK2004/000736

(22) International Filing Date: 26 October 2004 (26.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PA 2003 01576 27 October 2003 (27.10.2003) DK

(71) Applicant (for all designated States except US): DANFOSS SILICON POWER GMBH [DE/DE]; Heinrich-Hertz-Strasse 2, D-24837 Schleswig (DE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): OLESEN, Klaus, Kristen [DK/DK]; Vissingsgade 34, DK-6400 Sønderborg (DK).

(74) Agent: NISSEN, Georg; c/o Danfoss A/S, Patent Department, DK-6430 Nordborg (DK).

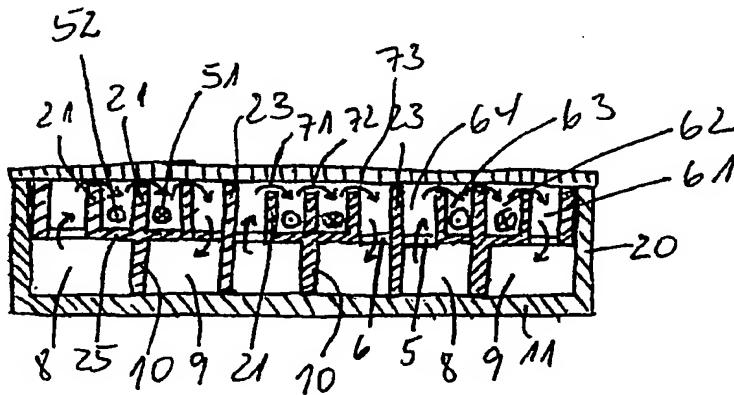
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLOW DISTRIBUTING UNIT AND COOLING UNIT HAVING BYPASS FLOW



(57) Abstract: A cooling unit for cooling in particular power semiconductors contains a distributor for guiding liquid across a surface to be cooled. The distributor comprises an inlet manifold (8) and outlet manifold (9), whereby the inlet and outlet manifolds are connected through a flow cell, which has a main flow channel (50). The main channel is formed as a meandering sequence of channel segments (61, 62, 63, 64). It has been found, that the transfer of heat by the liquid in the main flow channel can be improved by introducing a bypass flow channel (71, 72, 73) which allows the flow of liquid from the cell inlet to the cell outlet, wherein the bypass flow channel interconnects the channel segments of the main flow channel.